



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,146	03/29/2006	Guofu Zhou	H-358US	3770

26245 7590 03/04/2010
DAVID J COLE
E INK CORPORATION
733 CONCORD AVE
CAMBRIDGE, MA 02138-1002

EXAMINER

SPAR, ILANA L

ART UNIT	PAPER NUMBER
----------	--------------

2629

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

03/04/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

dcole@eink.com
gwilmoth@eink.com

Office Action Summary	Application No. 10/574,146	Applicant(s) ZHOU ET AL.	
	Examiner ILANA SPAR	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The following Office Action is responsive to the amendments and remarks received on December 17, 2009.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 2, 5-7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katase (US Patent Publication No. 2002/021483) in view of Verschueren et al. (US Patent Publication No. 2006/0007194).

With reference to claim 1, Katase teaches an electrophoretic display unit comprising

an electrophoretic display panel comprising a plurality of pixels each coupled to a pixel electrode, the plurality of pixels being arranged in a plurality of rows and columns (see paragraph 89, lines 1-6 and 25-26 and Figure 3);

data driving circuitry for supplying a data pulse to each of the pixel electrodes via a switching element associated with each pixel electrode (see paragraph 93);

a common electrode coupled to the plurality of pixels (see paragraph 89, lines 7-8); and

a controller for controlling the data driving circuitry for supplying a setting signal to each of the pixel electrodes for reducing a voltage across the associated pixel (see paragraph 95 and paragraph 140),

wherein the data pulse is supplied during a driving frame period during which each row of pixels is selected in turn (see paragraphs 124-125); and

the setting signal is supplied during a setting frame period (see paragraph 140).

Katase fails to teach that the common electrode receives an alternating voltage which transitions after the setting frame period.

Verschueren et al. teaches that the voltages applied to the pixel and common electrodes alternates polarity at intervals of one frame length (see paragraph 3).

It would have been obvious to one of ordinary skill in the art at the time of invention that the alternating voltage on the common electrode as taught by Verschueren et al. could be applied to the display as taught by Katase to further improve the image display, and that, if the voltage alternates once per frame, it would thus alternate after the setting signal is applied, as the setting signal is applied once per

Art Unit: 2629

frame (i.e. within the frame time, whereas the common voltage alternates as a frame ends).

With reference to claim 2, Katase and Verschueren et al. teach all that is required with reference to claim 1, and Katase further teaches that the switching element comprises a transistor, having a gate, source, and drain, the data driving circuitry being coupled to the source via a data electrode the selection driving circuitry being coupled to the gate via a selection electrode, and the pixel electrode being coupled to the drain (see paragraph 96, lines 5-12).

With reference to claim 5, Katase and Verschueren et al. teach all that is required with reference to claim 1, and Katase further teaches that the setting frame period is shorter than the driving frame period (see Figure 13, driving frame period T_v and setting frame period T_b).

With reference to claim 6, Katase and Verschueren et al. teach all that is required with reference to claim 1, and Katase further teaches that the alternating voltage signal (common voltage signal) and the setting signal have equal polarities during the setting frame period (see paragraph 140 – the setting signal is used to reduce the voltage across the pixel, such that it would be necessary for the polarity of the signals to be the same in order for the voltage to be reduced).

With reference to claim 7, Katase and Verschueren et al. teach all that is required with reference to claim 1, and Katase further teaches that the amplitude of the alternating voltage signal (common voltage signal) and the amplitude of the setting

Art Unit: 2629

signal are substantially equal to each other during the setting frame period (see paragraph 140).

With reference to claim 9, Katase and Verschueren et al. teach all that is required with reference to claim 1, and Katase further teaches a storage medium for storing information to be displayed (see paragraph 109).

With reference to claim 10, Katase teaches a method of driving an electrophoretic display panel, which comprises a plurality of pixels each coupled to a pixel electrode, the plurality of pixels being arranged in a plurality of rows and columns, which method comprises the steps of

during a driving frame period during which each row of pixels is selected in turn, supplying a data pulse to each of the pixel electrodes (see paragraph 133);

supplying a voltage signal to a common electrode coupled to the plurality of pixels (see paragraph 133); and

controlling data driving circuitry for supplying, during a setting frame period, a setting signal to each of the pixel electrodes for reducing a voltage across the associated pixel (see paragraph 140).

Katase fails to teach that the common electrode receives an alternating voltage which transitions after the setting frame period.

Verschueren et al. teaches that the voltages applied to the pixel and common electrodes alternates polarity at intervals of one frame length (see paragraph 3).

It would have been obvious to one of ordinary skill in the art at the time of invention that the alternating voltage on the common electrode as taught by

Art Unit: 2629

Verschueren et al. could be applied to the display as taught by Katase to further improve the image display, and that, if the voltage alternates once per frame, it would thus alternate after the setting signal is applied, as the setting signal is applied once per frame (i.e. within the frame time, whereas the common voltage alternates as a frame ends).

5. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katase in view of Verschueren et al. as applied to claim 1 above, and further in view of Applicant's admitted prior art.

With reference to claim 4, Katase and Verschueren et al. teach all that is required with reference to claim 1, but fail to teach that the data pulse is supplied during more than one consecutive driving frame period.

Applicant's admitted prior art teaches that the data pulse is supplied during more than one consecutive driving frame period (see page 2, lines 28-30).

It would have been obvious to one of ordinary skill in the art at the time of invention that a data signal may be applied to a display for as many frames as is required in order to properly display the image/video as intended.

With reference to claim 8, Katase and Verschueren et al. teach all that is required with reference to claim 1, but fail to teach the application of a shaking data pulse.

Applicant's admitted prior art teaches that the controller is adapted to control the data driving circuitry to provide any one or more of:

shaking data pulses;

one or more reset data pulses; and

one or more driving data pulses;
to each pixel (see page 2, lines 22-30).

It would have been obvious to one of ordinary skill in the art at the time of invention that it is advantageous to apply a shaking signal to the display to reduce display memory of images before writing subsequent images to the display, such that there is less 'sticking' of images, as is common in electrophoretic displays.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 2, and 4-10 have been considered but are moot in view of the new ground(s) of rejection.

Additionally, Applicant has argued that the previous rejection was incorrect based on the fact that the provided reference fails to teach a polarity reversal of a common electrode voltage. Examiner would like to point out that the claim language merely states that the voltage alternates, and that no polarity reversal is claimed in independent claims 1 and 10. Applicant has also argued that the reference does not teach that the polarity reversal occurs after each complete scan of the whole display. However, the claim language does not specify a relationship between the driving frame period, setting frame period, and the overall frame. It is therefore not stated in the claim language that the common voltage alternates after the entire display is scanned. Examiner suggests that the claim language be amended to include the features discussed in Applicant's arguments to further clarify the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ILANA SPAR whose telephone number is (571)270-7537. The examiner can normally be reached on Monday-Thursday 8:00-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571)272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ILS

/Amr Awad/
Supervisory Patent Examiner, Art Unit 2629